

# Refrigeration, Air Conditioning, and Warm Air Heating Equipment: 2002

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### SUMMARY OF FINDINGS

In 2002, the value of shipments of heat transfer equipment decreased by 5 percent to \$4,327 million, compared with the 2001 figure of \$4,555 million. The value of shipments of condensing units, refrigeration (complete), increased by 10 percent to \$300 million, from the 2001 level of \$273 million.

Room air-conditioners showed an increase of 11 percent in 2002 with \$881 million shipped, compared with the \$796 million shipped in 2001. The value of shipments of motor vehicle mechanical air-conditioning systems increased by 12 percent to \$2,088 million, compared with the 2001 figure of \$1,861. Compressors and compressor units decreased by 12 percent to \$2,227 million, compared with \$2,528 million in 2001. Automotive air-conditioning compressors showed a decrease of 6 percent in 2002 with \$1,566 million shipped, compared with the \$1,675 million shipped in 2001. Nonelectric warm air furnaces and humidifiers showed little change from \$1,529 million in 2001 to a value of \$1,554 million in 2002. Unitary air-conditioners decreased by 2 percent to \$5,048 million, from the 2001 level \$5,163 million. The value of shipments of air source heat pumps decreased by 4 percent to \$1,065 million in 2002, compared to the 2001 figure of \$1,110 million.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Blynda K. Metcalf, 301-763-4781.

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# U S C E N S U S B U R E A U

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Table 1. Summary of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating  
Equipment: 2002 and 2001  
[Value in thousands of dollars]

Product code	Product description	2002	2001
3334151	Heat transfer equipment.....	4,326,918	4,554,802
3334153 pt.	Commercial refrigeration equipment.....	192,002	213,035
3334155	Condensing units, refrigeration (complete).....	299,520	272,707
3334156	Room air-conditioners and dehumidifiers.....	881,108	796,353
3363917	Motor vehicle mechanical air-conditioning systems.....	2,087,928	1,861,190
333415A	Compressors and compressor units.....	2,226,732	2,527,866
336391B	Automotive air-conditioning compressors.....	1,566,279	1,675,007
333415C	Nonelectric warm air furnaces and humidifiers.....	1,554,270	1,527,587
333415E	Unitary air conditioners.....	4,402,338	4,380,054
333415F	Air source heat pumps.....	1,065,155	1,110,274
333415G	Ground and ground water source heat pumps.....	102,212	102,167
pt. Part.			

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning and Warm Air Heating Equipment: 2002 and 2001  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
3334151	Heat transfer equipment (except room and unitary air-conditioners).....	136	(X)	4,326,918	(X)	4,554,802
3334151001	Packaged terminal air-conditioners 1/.....	7	a/	112,960	a/	70,222
3334151003	Packaged terminal heat pumps.....	6	(D)	(D)	(D)	(D)
	Evaporative condensers.....	(X)	r/	2,105	r/	51,659
3334151005	100 tons and under.....	8	r/	420	r/	4,219
3334151007	Over 100 tons.....	9	r/	1,685	r/	47,440
	Room fan-coil air-conditioning units:					
3334151009	Vertical stack.....	3	(D)	(D)	53,013	23,560
3334151011	Vertical.....	9	c/	120,799	a/	89,620
3334151013	Horizontal.....	9	a/	127,353	a/	55,329
3334151015	Room air induction units.....	3	(D)	(D)	(D)	(D)
	Central station air-handling units (motor-driven fan type).....	(X)	390,822	740,787	r/	424,792
3334151017	Draw through.....	24	c/	367,242	r/	590,474
3334151019	Blow through.....	11	a/	8,217	108,477	7,550
3334151021	Heating and ventilating.....	11	c/	15,363	a/	41,836
	Coolers (refrigeration):					
	Ceiling, wall-mounted, and floor-mounted unit coolers.....	(X)	209,367	123,177	r/	208,479
3334151023	4,000 Btuh and below.....	8	50,996	9,735	r/	57,516
3334151025	4,001 to 6,000 Btuh.....	8	12,538	3,752	10,938	r/
3334151027	6,001 to 8,000 Btuh.....	9	24,626	10,695	19,938	r/
3334151029	8,001 to 12,000 Btuh.....	9	47,738	21,252	47,083	r/
3334151031	12,001 to 18,000 Btuh.....	10	36,464	23,045	r/	38,494
3334151033	Over 18,000 Btuh.....	14	37,005	54,698	r/	34,510
	Air-cooled refrigerant condensers (remote type).....	(X)	21,400	71,409	r/	24,186
3334151035	Under 30 tons.....	11	13,791	14,156	r/	16,711
3334151037	30 to 50 tons.....	9	1,989	7,591	r/	2,356
3334151039	Over 50 tons.....	7	5,620	49,662	r/	5,119
	Miscellaneous heat transfer equipment:					
	Shell-and-tube, shell-and-coil, shell-and-u-tube, tube-in-tube.....	(X)	(X)	52,588	(X)	52,392
3334151041	Condensers.....	6	(X)	26,786	(X)	25,989
3334151043	Liquid coolers.....	9	(X)	25,802	(X)	26,403
3334151045	Liquid-suction heat exchangers and refrigerant liquid receivers.....	7	(X)	5,177	(X)	7,704
	Central system finned coils (air-conditioning and refrigeration type).....	(X)	(X)	73,347	(X)	69,931
3334151047	Standard steam and steam distributing tube.....	13	(X)	21,269	(X)	15,232
3334151049	Standard water cooling and/or heating and cleanable tube water.....	13	(X)	45,355	(X)	46,017
3334151051	Volatile refrigerant cooling.....	9	(X)	6,723	(X)	r/
	Coil sales by original equipment manufacturers intended for resale or assembly into equipment by other manufacturer (all types).....	(X)	(X)	286,551	(X)	384,798
3334151053	Copper and aluminum.....	14	(X)	178,161	(X)	272,319
3334151055	Aluminum (only).....	7	(X)	49,551	(X)	54,359
3334151057	Other, including steel and copper.....	9	(X)	a/	58,839	(X)
3334151059	Factory-assembled, refrigeration type, finned gravity coils, including wetted-surface dehumidifiers.....	3	(X)	(D)	(X)	(D)
	Centrifugal liquid chilling packages, hermetic and open types.....	(X)	6,588	531,901	8,284	701,688
3334151061	200 hp and under.....	10	1,518	44,555	1,883	52,094
3334151063	201 to 300 hp.....	7	1,132	63,295	1,211	75,818
3334151065	301 to 400 hp.....	6	1,054	74,230	1,437	103,580
3334151067	Over 400 hp.....	5	2,884	349,821	3,753	470,196
	Ice-making machines.....	(X)	360,125	588,944	295,568	447,450
	Self-contained ice-cube makers.....	(X)	208,719	247,462	188,731	213,898
3334151069	Automatic, 200 lb and under .....	6	121,007	91,378	124,326	96,533
3334151071	Automatic, 201 lb and over.....	7	87,712	a/	156,084	a/
	Self-contained flake or chip machines.....	(X)	14,627	33,803	12,109	27,372
3334151073	300 lb and under.....	5	a/	2,752	a/	4,018
3334151075	Over 300 lb.....	13	b/	11,875	c/	29,785
3334151077	Not self-contained.....	8	72,986	141,984	45,222	81,239
3334151079	Combination ice makers and ice/drink dispensers.....	6	63,793	165,695	49,506	124,941
3334151081	Absorption refrigeration and dehydration systems.....	6	4,995	56,632	5,925	66,611
3334151083	Mechanical refrigeration systems used on all types of vehicles.....	5	(D)	(D)	(D)	(D)

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning and Warm Air Heating Equipment: 2002 and 2001  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
	Reciprocating air and reciprocating water cooled, air-cooled screw, air-cooled scroll, and water-cooled scroll machines.....	(X)	30,329	478,982	r/ 35,172	r/ 526,513
3334151085	20 hp and under.....	26	7,920	a/ 36,640	10,387	44,238
3334151087	21 to 49 hp.....	22	6,316	38,237	r/ 6,886	r/ 42,778
3334151089	50 to 75 hp.....	20	6,863	79,595	r/ 7,961	r/ 91,708
3334151091	Over 75 hp.....	18	9,230	324,510	r/ 9,938	347,789
3334151093	Factory-fabricated water cooling towers.....	12	a/r/ 9,546	a/r/ 207,377	a/ 9,464	a/ 198,483
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	4	862,406	192,002	968,444	213,035
3334155	Condensing units, refrigeration (complete).....	23	481,846	299,520	464,191	r/ 272,707
	Air-cooled hermetic-type.....	(X)	471,884	249,901	454,547	r/ 227,977
3334155023	1 hp and under.....	14	384,594	129,195	373,523	116,063
3334155025	1.5 hp.....	10	20,708	15,962	r/ 18,341	r/ 14,160
3334155028	2 and 2.5 hp.....	11	24,038	24,087	r/ 21,935	r/ 20,513
3334155030	3 hp.....	12	19,001	22,568	r/ 18,491	r/ 22,845
3334155032	Over 3 hp, but under 15 hp.....	14	23,543	58,089	r/ 22,257	r/ 54,396
3334155044	Water-cooled hermetic-type, under 15 hp.....	2	(D)	(D)	(D)	(D)
	Water or air-cooled hermetic-type.....	(X)	5,790	42,765	5,020	r/ 37,653
3334155061	15 hp.....	8	1,851	8,947	1,784	r/ 8,447
3334155063	20 hp.....	10	973	4,947	874	6,006
3334155065	25 hp.....	8	875	6,326	657	4,526
3334155067	30 hp.....	9	860	8,157	r/ 909	r/ 8,599
3334155070	40 hp.....	7	1,231	14,388	796	r/ 10,075
3334155080	Water or air-cooled open-type (all sizes).....	4	(D)	(D)	(D)	(D)
3334156	Room air-conditioners and dehumidifiers.....	15	(X)	881,108	(X)	796,353
3334156011	Electrically operated dehumidifiers, mechanically refrigerated, self-contained.....	8	761,261	91,411	702,623	96,304
	Room air-conditioners.....	(X)	3,897,196	789,697	3,124,590	700,049
3334156031	5,999 Btuh and under.....	8	(D)	(D)	857,487	105,466
3334156034	6,000 to 6,999 Btuh.....	6	379,872	52,585	277,763	49,232
3334156038	7,000 to 7,999 Btuh.....	7	168,987	30,250	a/ 73,227	a/ 16,238
3334156042	8,000 to 8,999 Btuh.....	5	(D)	(D)	481,093	93,908
3334156046	9,000 to 9,999 Btuh.....	5	c/ 33,536	c/ 11,576	35,558	11,958
3334156052	10,000 to 10,999 Btuh.....	8	505,369	110,243	406,989	91,993
3334156056	11,000 to 12,999 Btuh.....	9	a/ 541,445	a/ 137,792	499,284	127,135
3334156061	13,000 to 14,999 Btuh.....	7	(D)	(D)	18,156	9,776
3334156063	15,000 to 16,999 Btuh.....	7	c/ 125,532	c/ 39,148	93,367	29,512
3334156065	17,000 to 19,999 Btuh.....	8	a/ 244,631	a/ 77,297	208,567	68,917
3334156067	20,000 to 22,999 Btuh.....	8	a/ 36,055	a/ 10,968	38,744	12,412
3334156071	23,000 to 25,999 Btuh.....	9	118,121	47,186	105,460	42,535
3334156075	26,000 Btuh and over.....	10	a/ 30,010	26,739	28,895	40,967
3363917	Motor vehicle mechanical air-conditioning systems.....	(X)	(X)	2,087,928	(X)	1,861,190
3363917010	Air-conditioning units and systems for passenger automobiles 2/.....	19	7,647,413	1,401,711	a/ 7,437,991	1,203,699
3363917020	Air-conditioning units and systems for buses.....	8	a/ 222,152	c/ 120,222	a/ 242,239	130,453
3363917030	Other motor vehicle mechanical air-conditioning systems.....	11	3,517,357	565,995	3,273,053	527,038
333415A	Compressors and compressor units 3/ 4/.....	25	(X)	2,226,732	(X)	2,527,866
	All refrigerants (except ammonia).....	(X)	13,839,747	2,152,911	r/ 18,020,699	2,434,845
	Hermetic-type motor compressors.....	(X)	13,825,788	2,092,715	18,005,110	2,383,501
333415A011	Under 3 hp.....	8	9,177,246	948,482	13,325,305	1,089,008
333415A023	3 to 10 hp.....	10	(D)	(D)	(D)	(D)
333415A030	15 hp.....	11	22,834	24,886	22,303	25,689
333415A032	20 hp.....	11	14,051	24,841	17,955	29,781
333415A034	25 hp.....	11	12,824	23,100	15,901	27,227
333415A036	30 hp.....	12	(D)	(D)	8,842	23,723
333415A039	40 and 50 hp.....	10	(D)	(D)	(D)	(D)
333415A042	60 hp.....	8	(D)	(D)	3,095	13,036
333415A046	75 hp.....	8	(D)	(D)	(D)	(D)
333415A049	100 hp and over.....	8	3,129	31,837	(D)	(D)
333415A052	Open-type compressors (with or without motor--all sizes).....	10	(D)	(D)	10,124	25,597
333415A054	Screw type.....	5	(D)	(D)	(D)	(D)
333415A058	Ammonia refrigerants (all types).....	7	a/ 1,519	73,821	1,745	93,021
336391B000	Automotive air-conditioning compressors (open-type, with or without motor).....	7	14,827,988	1,566,279	15,902,962	1,675,007

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning and Warm Air Heating Equipment: 2002 and 2001  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	(X)	(X)	1,554,270	(X)	1,527,587
	Oil, forced air:					
333415C001	150,000 Btuh bonnet output and under.....	14	86,290	62,639	93,862	66,599
333415C005	150,001 Btuh bonnet output and over.....	11	6,463	7,560	r/ 3,823	r/ 5,267
	Gas, forced air:					
333415C007	150,000 Btuh bonnet output and under.....	18	2,928,655	1,272,692	2,796,001	1,228,380
333415C009	150,001 to 400,000 Btuh bonnet output.....	12	14,283	11,220	13,249	17,088
333415C011	Over 400,000 Btuh bonnet output.....	9	c/ 301,398	c/ 129,354	317,028	r/ 138,860
333415C079	All other nonelectric warm air furnaces.....	4	295	701	266	789
333415C081	Humidifiers (attachments to warm air furnaces) (all types), including central systems and self-contained (except portable humidifiers).....	14	602,860	a/ 70,104	612,346	a/ 70,604
333415E	Unitary air-conditioners.....	55	(X)	4,402,338	(X)	4,380,054
333415E005	Recreational vehicle air-conditioners.....	5	(D)	(D)	(D)	(D)
	Single package air-conditioners, with or without evaporator fans, including refrigeration chassis and remote-condenser type.....	(X)	(D)	(D)	(D)	(D)
	Horizontal.....	(X)	208,437	577,866	235,122	687,586
333415E007	Under 27,000 Btuh.....	14	18,563	15,300	21,338	17,702
333415E009	27,000 to 32,999 Btuh.....	12	20,953	18,818	25,706	23,316
333415E011	33,000 to 53,999 Btuh.....	13	62,937	63,814	r/ 72,426	72,032
333415E013	54,000 to 64,999 Btuh.....	13	39,195	54,488	r/ 43,263	60,075
333415E015	65,000 to 96,999 Btuh.....	10	21,096	49,440	21,276	49,235
333415E017	97,000 to 134,999 Btuh.....	10	18,031	59,479	19,282	63,737
333415E019	135,000 to 184,999 Btuh.....	10	10,974	51,961	11,211	53,293
333415E021	185,000 to 249,999 Btuh.....	11	6,780	53,228	7,850	59,892
333415E023	250,000 to 319,999 Btuh.....	10	4,989	41,718	5,950	51,450
333415E035	320,000 to 379,999 Btuh.....	11	1,194	20,623	1,439	23,416
333415E041	380,000 Btuh and over.....	9	3,725	148,997	5,381	213,438
	Other than horizontal.....	(X)	(D)	(D)	(D)	(D)
333415E043	Under 54,000 Btuh.....	5	(D)	(D)	(D)	(D)
333415E045	54,000 to 64,999 Btuh.....	4	3,427	7,783	(D)	(D)
333415E047	65,000 to 96,999 Btuh.....	4	412	1,532	862	2,878
333415E049	97,000 to 134,999 Btuh.....	4	(D)	(D)	(D)	(D)
333415E051	135,000 to 184,999 Btuh.....	4	582	4,714	515	3,968
333415E053	185,000 Btuh and over.....	5	(D)	(D)	(D)	(D)
	Year-round air-conditioners, single package and remote-condenser type (except heat pumps).....	(X)	554,860	1,323,579	576,494	1,469,649
333415E055	Under 33,000 Btuh.....	17	127,370	111,865	r/ 131,735	r/ 118,599
333415E057	33,000 to 38,999 Btuh.....	16	104,417	120,846	r/ 103,931	r/ 121,734
333415E059	39,000 to 43,999 Btuh.....	11	24,775	26,112	27,421	30,700
333415E061	44,000 to 53,999 Btuh.....	14	69,015	95,311	69,383	97,510
333415E063	54,000 to 64,999 Btuh.....	16	86,503	164,579	90,753	181,346
333415E065	65,000 to 134,999 Btuh.....	8	90,459	276,933	95,473	294,837
333415E067	135,000 to 184,999 Btuh.....	8	25,891	148,144	26,737	154,008
333415E069	185,000 to 249,999 Btuh.....	10	13,755	119,516	14,746	128,182
333415E071	250,000 to 319,999 Btuh.....	8	6,331	63,516	7,548	76,137
333415E073	320,000 to 379,999 Btuh.....	8	1,933	30,445	2,190	34,810
333415E075	380,000 to 539,999 Btuh.....	6	1,698	34,267	1,894	39,431
333415E077	540,000 to 639,999 Btuh.....	6	898	24,155	1,982	39,117
333415E079	640,000 Btuh and over.....	6	1,815	107,890	2,701	153,238
333415E081	Water source heat pumps (except room air-conditioners).....	9	c/ 124,961	c/ 138,046	130,351	144,114
	Split system air-conditioning condensing units.....	(X)	4,094,576	2,100,117	3,768,177	1,959,478
333415E082	Under 22,000 Btuh.....	13	278,810	99,760	r/ 260,865	r/ 84,848
333415E083	22,000 to 26,999 Btuh.....	14	839,095	295,030	r/ 754,395	266,718
333415E085	27,000 to 32,999 Btuh.....	15	737,428	306,436	658,818	274,730
333415E087	33,000 to 38,999 Btuh.....	14	886,304	415,304	r/ 809,401	382,586
333415E089	39,000 to 43,999 Btuh.....	12	391,894	213,914	363,248	199,743
333415E091	44,000 to 53,999 Btuh.....	13	508,115	311,713	477,654	295,841
333415E093	54,000 to 64,999 Btuh.....	10	391,711	284,517	381,967	279,157
333415E095	65,000 to 96,999 Btuh.....	6	23,565	33,874	23,957	32,352
333415E097	97,000 to 134,999 Btuh.....	6	17,254	33,419	17,212	33,950
333415E099	135,000 to 184,999 Btuh.....	6	9,186	28,439	9,215	28,557
333415E09A	185,000 to 249,999 Btuh.....	6	4,815	20,931	4,810	21,006
333415E09C	250,000 to 319,999 Btuh.....	3	1,687	9,729	1,719	9,940
333415E09E	320,000 to 379,999 Btuh.....	4	1,681	11,174	1,662	11,033
333415E09G	380,000 to 539,999 Btuh.....	4	1,245	10,787	1,378	12,282
333415E09J	540,000 to 639,999 Btuh.....	4	608	7,136	654	7,405
333415E09L	640,000 Btuh and over.....	3	1,178	17,954	1,222	19,330

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning and Warm Air Heating Equipment: 2002 and 2001  
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2002		2001	
			Quantity	Value	Quantity	Value
	Split system air-conditioning coils.....	(X)	3,159,287	689,328		678,057
333415E09M	With blower.....	10	1,579,744	490,048	r/ 1,462,213	454,974
333415E09P	Without blower.....	12	1,579,543	199,280	1,650,999	223,083
333415F	Air source heat pumps (except room air-conditioners).....	22	1,363,926	1,065,155	1,376,096	1,110,274
	Single package:					
333415F023	Under 27,000 Btuh.....	18	(D)	(D)	36,031	31,565
333415F034	27,000 to 41,999 Btuh.....	16	76,775	84,961	97,865	112,050
333415F045	42,000 to 64,999 Btuh.....	16	72,379	95,219	83,910	114,534
333415F056	65,000 Btuh and over.....	8	(D)	(D)	14,069	48,979
	Split system:					
333415F067	Under 27,000 Btuh.....	13	a/ 372,457	188,664	r/ 352,367	r/ 174,507
333415F078	27,000 to 41,999 Btuh.....	12	511,902	344,681	498,634	340,828
333415F089	42,000 to 64,999 Btuh.....	11	275,148	251,143	271,600	250,645
333415F095	65,000 Btuh and over.....	7	10,188	25,283	21,620	37,166
333415G	Ground and ground water source heat pumps.....	5	70,935	c/ 102,212	64,919	102,167
	Single and split systems:					
333415G010	Under 27,000 Btuh.....	3	(D)	(D)	(D)	(D)
333415G020	27,000 to 41,999 Btuh.....	2	(D)	(D)	(D)	(D)
333415G030	42,000 to 64,999 Btuh.....	3	(D)	(D)	(D)	(D)
333415G040	65,000 Btuh and over.....	3	(D)	(D)	(D)	(D)

Btuh British thermal units-per hour. D Withheld to avoid disclosing data for individual companies. pt. Part. r/Revised by 5 percent or more from previously published data. X Not applicable.

1/Defined as factory-selected combinations of heating and cooling components or assemblies intended to serve an individual room and comprising: (1) heating assembly available with element for use with hot water, steam, and electricity; means for forced heated air circulation and distribution; integral or remote temperature controls; (2) slide-in cooling section with complete refrigerant cycle; (3) room cabinet; (4) provision for outdoor air intake and discharge and accessories as required for mounting in a building wall; (5) provisions for air filtration and ventilation; (6) permanent individual branch circuit wiring with a suitable line cord or terminating at a junction box within the room cabinet; and (7) provision for free conditioned air distribution, or when forced circulation is employed for minimal duct work having a total external static resistance not exceeding 1/10 inch of water.

2/Data exclude systems assembled from purchased components and installed at passenger automobile assembly lines. The values are understated for some systems because of the exclusion of compressors.

3/Represents only those compressors and compressor units produced and shipped separately, including interplant transfers.

4/Includes units shipped for household refrigerators.

Note: Percent of estimation for each item is indicated as follows: a/15 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Quantity of Assembled Compressor Bodies: 2002 and 2001  
[Quantity of number units]

Product description	No. of cos.	2002	2001
Compressor bodies 1/ 2/.....	(X)	17,280,529	22,783,901
All refrigerants (except ammonia).....	(X)	13,575,238	18,841,043
1/4 hp and under.....	3	(D)	(D)
1/3 hp and 1/2 hp.....	4	(D)	1,001,066
3/4 hp. and 1 hp.....	4	(D)	(D)
1-1/2 hp.....	4	(D)	(D)
2 hp.....	6	(D)	(D)
3 hp.....	10	4,959,627	(D)
4 hp.....	4	264,153	372,150
5 hp.....	9	1,114,359	1,230,954
7-1/2 hp.....	11	90,877	107,455
10 hp.....	15	(D)	(D)
15 hp.....	13	131,268	133,077
20 hp.....	11	20,802	25,256
25 hp.....	12	18,438	22,711
30 hp.....	14	25,549	24,944
40 hp.....	13	15,096	17,567
50 hp.....	10	4,815	4,433
60 hp.....	11	5,136	4,903
75 hp.....	11	11,042	11,494
100 hp and over.....	10	15,821	16,004
Automotive air-conditioning, including passenger auto- mobiles, trucks, buses, agriculture and construction equipment.....	3	(D)	(D)
Ammonia refrigerants.....	2	(D)	(D)

D Withheld to avoid disclosing data for individual companies. X Not applicable.

1/Includes units for household refrigerators.

2/Represents the total number of compressor bodies assembled, whether shipped separately or incorporated into a condensing package or unitary end-use product such as single package air-conditioners freezers, and refrigerators (manufactured and remanufactured units).

Table 4. Shipments, Exports, Imports, and Apparent Consumption of Air-Conditioning and Refrigeration Equipment: 2002 and 2001  
[Value in thousands of dollars]

Product code 1/	Product description	Manufactures' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/ 2/	Imports for consumption 3/ 4/
<b>2002</b>				
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers.....	4,326,918	202,410	88,369
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	192,002	15,010	27,639
3334155	Condensing units, all refrigerants.....	299,520	30,426	28,823
3334156	Room air-conditioners and dehumidifiers.....	881,108	-	-
3363917	Motor vehicle mechanical air-conditioning systems.....	2,087,928	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants.....	2,226,732	1,048,303	1,188,658
336391B	Automotive air-conditioning compressors.....	1,566,279	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	1,554,270	(NA)	(NA)
333415E	Unitary air-conditioners.....	4,402,338	50,684	136,686
333415F	Air source heat pumps.....	1,065,155	(NA)	(NA)
333415G	Ground and ground water source heat pumps.....	102,212	(NA)	(NA)
<b>2001</b>				
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers.....	4,554,802	294,595	111,759
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	213,035	13,401	36,859
3334155	Condensing units, all refrigerants.....	272,707	30,069	18,874
3334156	Room air-conditioners and dehumidifiers.....	796,353	89,025	643,461
3363917	Motor vehicle mechanical air-conditioning systems.....	1,861,190	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants.....	2,527,866	1,111,778	1,007,458
336391B	Automotive air-conditioning compressors.....	1,675,007	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	1,527,587	(NA)	(NA)
333415E	Unitary air-conditioners.....	4,380,054	322,107	180,525
333415F	Air source heat pumps.....	1,110,274	(NA)	(NA)
333415G	Ground and ground water source heat pumps.....	102,167	(NA)	(NA)

- Represents zero. NA Not available. pt. Partial.

1/Source: Census Bureau report EM 545, U.S. Exports (see Table 5 for a comparison of North American Industry Classification System (NAICS)-based product codes with Schedule B export codes and HTSUSA import codes.

2/Dollar value represents the c.i.f. (cost, insurance, and freight) value at the port of export.

3/Source: Census Bureau report IM 145, U.S. Imports for Consumption. Figures include both import value and duty value.

4/Represents the c.i.f. (cost, insurance, and freight) value at the first port of entry in the United States plus U.S. import duties.



**Table 5. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export codes, and HTSUSA Import Cdes: 2002**

Product code	Product description	Export code 1/	Import code 2/
3334151	Heat transfer equipment.....	8415.82.0030	8415.82.0030
		8415.82.0035	8415.82.0035
		8415.83.0040	8415.83.0040
		8418.69.0010	8418.69.0010
		8418.69.0015	8418.69.0015
		8418.69.0045	8418.69.0045
		8418.69.0050	8418.69.0050
		8418.69.0055	8418.69.0055
		8418.69.0060	8418.69.0060
3334153146	Mechanical drinking water coolers.....	8418.69.0020	8418.69.0020
3334155	Refrigeration condensing units.....	8418.99.0005	8418.99.8005
		8418.99.0010	8418.99.8010
		8418.99.0015	8418.99.8015
		8418.99.0020	8418.99.8020
		8418.99.0025	8418.99.8025
3334156	Room air-conditioners and dehumidifiers.....	8415.10.0040	8415.10.0040
		8415.10.0060	8415.10.0060
		8415.10.0080	8415.10.0080
		8415.82.0050	8415.82.0055
			8415.82.0060
3363917	Motor vehicle mechanical air-conditioning systems 3/.....	(X)	(X)
333415A	Compressors and compressor units, all refrigerants.....	8414.30.4000	8414.30.4000
		8414.30.8010	8414.30.8010
		8414.30.8020	8414.30.8020
		8414.30.8030	8414.30.8030
		8414.30.8050	8414.30.8050
		8414.30.8060	8414.30.8060
		8414.30.8070	8414.30.8070
		8414.30.8080	8414.30.8080
		8414.30.8090	8414.30.8090
336391B	Automotive air-conditioning compressors 3/.....	(X)	(X)
333415C	Nonelectric warm air furnaces and humidifiers 3/.....	(X)	(X)
333415E	Unitary air-conditioners (except room).....	8415.81.0010	8415.81.0010
		8415.81.0020	8415.81.0020
		8415.81.0030	8415.81.0030
		8415.82.0005	8415.82.0005
		8415.82.0010	8415.82.0010
		8415.82.0015	8415.82.0015
		8415.82.0020	8415.82.0020
		8415.82.0025	8415.82.0025
		8415.83.0050	8415.83.0050
		8415.83.0060	8415.83.0060
333415F	Air source heat pumps 3/.....	(X)	(X)
333415G	Ground and ground water source heat pumps 3/.....	(X)	(X)

X Not applicable.

1/Source: 2002 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2002).

3/Import-export classification not directly comparable.

# Appendix.

## General CIR Survey Information, Explanation of General Terms and Historical Note

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### GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

### NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

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The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

## RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

## DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

## DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

## EXPLANATION OF GENERAL TERMS

**Capacity.** The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

**Consumption.** Materials used in producing or processing a product or otherwise removing the product from the inventory.

**Exports.** Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

**Gross shipments.** The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Interplant transfers.** Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

**Inventories.** The quantity or value of finished goods, work in progress, and materials on hand.

**Machinery in place.** The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

**Net receipts.** Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

**Production.** The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

**Quantities produced and consumed.** Quantities of each type of product produced by a company for internal consumption within that same company.

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**Quantity and value of new orders.** The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

**Quantity and value of shipments.** The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and

returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

**Stocks.** Total quantity of ending finished inventory.

**Unfilled orders (backlog).** Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

#### **HISTORICAL NOTE**

Data on air-conditioning and refrigeration have been collected by the Census Bureau since 1944. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.